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TITLE: Teledermatology

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CONTRACTING ORGANIZATION: Landstuhl Regional Medical Center
APO, AE 09180

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13. ABSTRACT *(Maximum 200 Words)*

Teledermatology provides better access to care for the patient, a short turn around time for replies from the dermatologist and a saving of time, costs and resources by eliminating the need to send the patient to the dermatologist.

14. SUBJECT TERMS

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Introduction:

The Teledermatology Research Project (Europe) uses secure web based consult system to provide dermatology support to outlying, remote and deployed health care providers in the TriCare Europe Area of Responsibility, therefore reducing lost duty time and decreasing costs of transportation and per diem. Teledermatology consults have been received from Prince Sultan Air Base, Saudi Arabia to Lajes Field, Azores Portugal and Germany to Italy and the Balkans .

BODY:

Improve the access of patients to services throughout the region by providing access to a dermatologist.

Improve access of patients to dermatology services throughout the region.

Educate medical staff on use of telemedicine that may be applied in theater / battlefield / peacekeeping applications.

Clinically monitor effects of dermatology treatment using telemedicine.

Reduce travel time and costs for providers, patients, and family members.

Reduce cost by eliminating the need for contract dermatologist services.

Minimize the amount of lost duty days.
    Patient
    Family member/escort

Test equipment to gain valuable knowledge of use and / or practicability in effective theater / battlefield / peacekeeping applications.

Assess ability to diagnose and treat quickly using telemedicine.

APR-MAY99:

By providing greater access to care through the use of technology Teledermatology has increased the quality of care and decreased the costs associated with lost duty time from having to travel to the facility where the dermatologist is physically located. The infrastructure for web access already exists in most areas and the cost of equipment is low. Initially Teledermatology was deployed to 4 locations, Hohenfels, Schweinfurt, SHAPE, Vicenza. The computers were not configured properly, program disks and user/installation documentation was missing from some sets and duplicated in others. Printers and Camera battery charger are 120V requiring a transformer in facilities that allow it. The task of Consult Manager is assigned as an additional duty and decreases the effectiveness of Teledermatology system. There was little more than "Mouth Service" by the command level above the Health Care Facilities. There was some difficulty coordinating installation and training due to increased operations in the Balkans and other areas. At Vicenza there was only 1 person left to train. The administrative process of scheduling time to make the visits and the process of acquiring TDY orders and such make no consolations for making immediate changes. SHAPE had a problem with bandwidth, each time you would submit a consult it would bring the LAN to a stop and most often time out before completing the transfer of images. TriCare Europe Telederm Server brought up for testing and development. In the first month, MAY 99, there were 34 users registered and 4 consults submitted.

JUN99

Monthly VTC initiated w/CONUS sites and Project Manager, emphasized use of Telederm Project Bulletin Board Service (TPBBS). Initiated Telederm Mail group. Discrepancy between the Site Status Reports and Search Consults applications, numbers are not adding up. If a facility registered under anything other than the original Consults locations Registrations would not be counted. No consult(s) the end of JUN99. Personnel who were originally trained went on leave, deployment or PCS without replacements. Newsletter started, addressing activity by site, problems/solutions, questions and answers. Again not enough time to train and/or use the Teledermatology consult system due to other duties. Received complaints regarding amount of time necessary to down load images at remote workstations. Physicians do not have time to do this along with their regular/scheduled appointment load and other administrative duties (One accidental hit on the carriage return wipes out all the input and the person must start over.). Need to develop some way for this whole process to be done in local mode, and then submit at once instead of entering data on line with the possibility of data/input loss. Due to lack of training and experience, personnel at remote sites had extreme difficulty using Windows NT operating systems. Subsequently, Telederm Administrator for LRMC met with the TriCare programmer to work out programming issues to ensure similarities between the Telemedicine & Advanced Technology Research Center (TATRC) and the TriCare Europe Teledermatology servers. 4 consults and no new users registered in JUN99.

JUL99

One dermatologist on leave and one moving from Ramstein Air Base to Landstuhl Regional Medical Center (LRMC). Experienced 2-week period during which consults were not answered within the established 24-hour standard. Problems reported referencing clear pictures with the digital camera using the Macro lens and Flash. Suggested disabling flash and not using macro lens, take pictures from a little farther distance, use LCD screen and practice. Received request from recently assigned Dermatologist. My understanding was he would be replying to consults. However upon further investigation, he wanted to request consults. Had an urgent derm case and wanted a second opinion. This led to his requesting a Canfield CDIS Laptop solution, $6,500.00 laptop computer, $1,700.00 camera and $900.00 to $2,200.00 worth of software. Furnished provider with digital camera and instructions to allow him to use already established protocols. Provider returned equipment stating it was not sufficient for his needs. Experienced another time period (8 weeks) when our office was unable to receive consults (Consult managers went TDY to NCO schools, without alternate individuals being assigned.). Reviews of TPBBS revealed consult managers were not using TPBBS to stay current regarding project issues. Weekly test consults not submitted. There is a lack of incentives for command support; I have no means by which to encourage people to use the system. TriCare Europe committed to buying cameras and video teleconferencing (VTC) sets to expand the capabilities of Teledermatology to other services through out the region and provide continuing education and support through VTC. 4 consults and no new registrations for JUL 99.

AUG99

VTC Pass word changes to meet new security requirements. TriCare Europe reprogramming to Active Server Pages (ASP). There were 4 consults and 2 new users registered in AUG99.

SEP99

Experienced problems with TPBBS. When I try to access, I get a message that my account has not been created. When I try to re-register I get a message that my account already exists. Sequel Server failure, system inaccessible for 1 day. TriCare Telederm meeting. Brought up Lajes Field, Azores. 4 New users registered in SEP99.

OCT99

Turned in AMEDD TDERM Utilization Report (Attachment #1). Since 1 May over 200 consults submitted to the system. Memorandum of Agreement (MOA) between United States Army Medical Research and Material Command (USAMRMC) and TriCare Europe for Database Software Replacement to switch to a user friendly software system (Attachment #2). Possibly added to the mailing list to receive Distance Learning Project with the Center for Total Access for four computer-based training models (i.e. Patient Information, Digital Camera, Tutorial on Consult Management System, Dermatology Atlas). TDERM/TMED Evaluation and Clinical Investigation Project with Georgetown University contracted to investigate if beneficial or useful. Engineering Change Proposal (ECP) increasing the number of characters in Recommendation, Step 5 treatment and medication fields to allow better description without cutting off the end of the statement.(Add description of what this is.). Changed Recommendations, Step 3; each regional Project Manager **MUST** provide particular regional information ASAP. Currently, only Walter Reed Army Medical Center (WRAMC) and North Atlantic Regional Medical Command (NARMC) information is seen due to the ECP change. NARMC addressed the issue that many of the questionnaires in the Questionnaire Summary Report were not being reflected. Administrators cannot know if all or any of the questionnaires have been completed at this time. This issue will be taken on by Web Lab programmers WRAMC after the programmed ECP changes have been completed. Experienced difficulty with remote areas uploading and sending consults. Possible solution: placing the https://cderm.tatrc.org URL on the local medical Center (MEDCEN) Website. Dwight D. Eisenhower Army Medical Center (DDEAMC) realized quicker upload and transmit times, consequently local IMO put a trace on the telecommunications routes from the local site to the server at TATRC. Questions were raised whether my position was funded for travel. Project administrator informed LRMC that $5,000 was provided to each MEDCEN for local travel. Received suggestion to utilize dermascopes for images; however, the quality of images did not support the expense. None of the participants from the other regions knew of any use of a dermascope. Consider the feasibility in holding a Regional Dermatologist's conference to discuss Teledermatology issues. Both Southeast and European Regional Medical Centers (RMCs) are beginning to hold conferences for the Dermatologists in their respective regions to meet and discuss issues pertaining to the Teledermatology program in their clinical business practices. 0 consults 0 New users registered.

NOV99

Received notification of a new consult, #LR0041, but unable to find consult on website. Attempted to register a new user; but, when European region selected you are directed to Madigan AMC, Seattle, Washington, USA vs. European site. User feedback information on Website never reached intended recipient. Duplicate consults were created when a database server problem occurred. (Wouldn't you know it we have no consults for 2 months and when there's a problem with the system we have gotten 4.). Unable to access consult questionnaires, research revealed the inaccessible were duplicates.

Server Database Problem[15Nov99/RM]

Project Administrator requested assistance in correcting a database problem that occurred to server on 8 November 1999.

BACKGROUND:

- On 8 November between 0947 and 1616 hrs, ALL of the consults for the Great Plains, Northwest, and European RMCs were some how deleted from the database. The Southeast RMC, however, was not affected.

- This problem also determined that the server was not getting backed up prior to this incident. Because if it was, we could have re-uploaded the backed up information reducing the overall amount of lost information.

- The database has been corrected since 9 November and is fully functional.

- The database is also getting backed up.

- Fortunately, the table(s) in the database containing the Consultants' Recommendations and Digital Images were NOT affected.

- We are re-upload missing consults using the information contained on the patients' SF513.

ACTION ITEMS

A. Need Local Project Managers to provide SF513s from ALL of their Clinical Consults from 1 May 1999 up through 8 November.

1. Please fax the entire SF513 to include Patient Identification information located at the bottom of the SF513.

2. Ensure that the entire document is sent. It seems that the Patient ID information is getting chopped off during faxing. Without the Patient Identification information, we cannot reestablish the consult. If you must, write the information in the open space of the Consultation Report Block or at the top of the SF513.

3. Patient Identification Information:
    (a) FMP #
    (b) SS#
    (c) Last Name, First Name, MI
    (d) MTF Location

4. Also, include the following from New Consult, Step 2: Demographics:
    (a) Patient's Home telephone number
    (b) Branch of Service
    (c) Military Status
    (d) TriCare Prime Yes or No and If Yes, the location.

- If you can provide me with this information. I will ensure that the consults get reestablished.
- I understand that this will be a bit tedious but, unfortunately, it must be done reestablish the deleted consults.
- If you have any questions or, if you want to vent don't hesitate to call. I will try and contact you as well..

Regional Dermatologist meeting of the TriCare Europe Regional Teledermatology Working Group to; 1) Review operation of Teledermatology web software; 2)Determine best practice procedures; 3) Modify / Approve Service Level Agreements; 4)Develop recommended referral processes; 5) Identify training requirements..

15 consults 11 New users registered.

DEC99

2 consults 2 new users.

Key Research Accomplishments

- Provide remote caretakers with the ability to request Teledermatology consult anywhere internet access is available
- Reduced costs (Per Diem and Travel) by avoiding sending patient to dermatologist.
- Reduced lost time of AD member by avoiding sending to dermatologist(as patient or escort).
- Improved access to dermatology services for Patient and Provider. Development of Secure Web Based Teledermatology Consult system using Cold Fusion.
- Establishment of Dermatology Database.
- Reprogramming of Web Based Teledermatology Consult system to ASP.
- TriCare Europe Teledermatology Working Group

Conclusions

Observations:
    1. There seems to be little support from the Command level. The LRMC Telemedicine clinician must schedule his patient load to be able to get away to provide support and training to remote sites.
    2. Some equipment not 220V (printer, battery charger).
    3. Web access is slow and brings the LAN to a crawl. The entire SHAPE Health Clinic is on a 64kbs connection.
    4. Initially users are enthusiastic and appreciative. Then it becomes a burden and use declines.
    5. Insufficient time (Teledermatology, Teleradiology, Telecardiology, other Telemedicine to Bosnia, Kosovo, Saudi Arabia, Africa and other locations) and personal (1) to provide acceptable support to a region covering 300K+ Beneficiaries in 100+ Countries at 52 Medical Treatment Facilities, 11 Hospitals (3 Army, 4 Navy, 4 Air Force), 41 Clinics (27 Army, 6 Navy, 8 Air Force)

Recommendations:
    1. Teledermatology/Telemedicine support positions should not be "just another extra duty".
    2. Better planning and preparation of equipment for deployment outside the U.S. as most countries are 220V 50Hz. Either Dual Voltage or dedicated 220V and equipment was not loaded and tested prior to shipping.
    3. Web access, especially uploads and downloads, can be done during off hours. Ultimately a higher bandwidth connection.
    4. Continue to provide support and keep them involved by scheduling regular Staff Assistance Visits (SAV) as is done with most other sections.

Maj Kobylarz, LRMC Telemedicine Clinical Lead, must arrange his patient schedule to accompany me on the install/training trips.

To sum it up, how I see it, LRMC and the satellites are busy with missions elsewhere and will not commit the time and/or personnel to fully incorporate any new system.

References
NONE

Appendices
(Attachment #1).

AMEDD
Triservice Site Status Report

As of 12 July 1999

Region	Site Name	Update D/M	Site Code	Reg. ConMgr	Reg. Phys	Consults Training Total	Consults Clinical Total	Site(s) Average #Consult/Wk
Southeastern	1Blanchfield ACH	29-Jun	BA	1	0	1	0	0.2
	Charleston AFB	1-May	CA	0	0	0	0	0
	2DDEAMC Ft Gordon	"	DD	2	1	0	0	0
	Fox AHC	"	FA	0	0	0	0	0
	Key West NBMC	"	KW	0	0	0	0	0
	Kings Bay NMC	"	KB	0	0	0	0	0
	3L. Joel AHC Ft. McPherson	6-Jul	LJ	0	1	0	5	1
	4Lyster ACH	1-May	LA	2	0	0	0	0
	MacDill AFB	"	MD	0	0	0	0	0
	Martin AHC Ft. Benning	"	MA	0	0	0	0	0
	5Moncrief ACH Ft. Jackson	14-Jun	MC	8	2	0	11	2.2
	Moody AFB	1-May	MB	0	0	0	0	0
	NH Jacksonville	"	NJ	0	0	0	0	0
	6NH Roosevelt Roads	29-Jun	RR	0	1	0	2	0.4

	Site Name	Update D/M	Site Code	Reg. ConMgr	Reg. Physicians	Consults Training Totals	Consults Clinical Totals	Site(s) Average #Consult/Wk
	NHB Beaufort	28-Jun	NB	0	0	0	0	0
	7NHC NAVSTA	23-Jun	NH	1	1	0	3	0.6
	Noble AHC	1-May	NO	0	0	0	0	0
	8Patrick AFB	30-Jun	PT	2	2	0	7	1.4
	Robins AFB	28-Jun	RA	0	0	0	0	0
	Shaw AFB	1-May	SH	0	0	0	0	0
	US Southern HC	"	UC	0	0	0	0	0
	Winn AHC Ft. Stewart	"	WA	0	0	0	0	0
Sub Total				**16**	**8**	**1**	**28**	**5.8**

Great Plains

	Site Name	Update D/M	Site Code	Reg. ConMgr	Reg. Physicians	Consults Training Totals	Consults Clinical Totals	Site(s) Average #Consult/Wk
	9Bliss AHC	25-Jun	BL	0	1	5	0	1
	10Brooke AMC	7-Jun	BK	1	0	2	4	1.2
	Brooks AFB	1-May	BS	0	0	0	0	0
	Corpus Christi NA	"	CC	0	0	0	0	0
	11Darnell ACH	"	DA	4	0	0	0	0
	Evans AHC	"	EV	0	0	0	0	0
	Irwin AHC	"	IR	0	0	0	0	0
	Lackland AFB	"	LD	0	0	0	0	0

Great Plains	Site Name	Update D/M	Site Code	Reg. ConMgr	Reg. Physicians	Consults Training Totals	Consults Clinical Totals	Site(s) Average #Consult/Wk
(Cont.)								
	12Med Dept Act Ft. Leonardwood	29-Jun	LW	6	12	3	7	2
	13Munson AHC	15-Jun	MU	7	1	0	2	0.4
	NAS Ingleside	1-May	IN	0	0	0	0	0
	NAS Kingsville	"	KI	0	0	0	0	0
	Randolph AFB	"	RM	0	0	0	0	0
	Reynolds AHC	"	RE	0	0	0	0	0
	14USMEDDAC Ft. Polk	1-Jul	PO	1	32	4	1	1
	William Beaumont ACH	1-May	WL	0	0	0		0
Sub Total				**19**	**46**	**14**	**14**	**5.6**

Northwest

	Site Name	Update D/M	Site Code	Reg. ConMgr	Reg. Physicians	Consults Training Totals	Consults Clinical Totals	Site(s) Average #Consult/Wk
	15Everett NBMC	25/6	ET	0	0	2	0	0.4
	Fairchild AFB	1-May	FR	0	0	0	0	0
	16Madigan AMC	1-May	MG	0	0	0	0	0
	17McChord AFB	1-May	MR	5	2	0	0	0
	18NH Bremerton	21/5	BT	1	0	1	0	0.2

	Update D/M	Site					
*19*NH Oak Harbor	14/6	OH	4	5	0	1	0.2
Umatilla AHC	1-May	UM	0	0	0	0	0
Sub Total			**10**	**7**	**3**	**1**	**0.8**

European

*20*Hohenfels AHC	25/6	HO	6	2	2	0	0.4
*21*Landstuhl AMC	1-May	LR	2	2	0	0	0
*22*Schweinfurt ACH	7-Jul	SC	3	5	0	6	1.2
*23*SHAPE HCF	15/6	SA	1	7	1	2	0.6
*24*Vicenza AHC	1-May	VI	4	3	0	0	0
Sub Total			**16**	**19**	**3**	**8**	**2.2**

TOTAL			**61**	**80**	**21**	**51**	**14.4**

Notes:
1. # = an Active Site (24/51 sites)
2. As of 1 May 1999 the Average # of Consults transmitted/site is: **3**
   (a.) Calculation for Average # of Consults transmitted per Site is: =SUM(E89 + F89)/24
3. Calculation for Average # of Consults per Work Week is: =SUM(E#,F#)/5.
   (a.) Based on a 5 Day Work Week.
4. Update D/M is the Day/Month of consult activity.

(Attachment #2).

MEMORANDUM OF AGREEMENT
BETWEEN
TRICARE EUROPE
AND
U.S. ARMY MEDICAL RESEARCH AND MATERIEL COMMAND

SUBJECT: Collaborative Telemedicine Database Software Replacement Effort

1. **PURPOSE.** This agreement is established to identify those services and responsibilities between the U.S. Army Medical Research and Materiel Command (hereinafter referred to as USAMRMC) and TRICARE Europe regarding the establishment of collaborations between USAMRMC and TRICARE Europe in the area of telemedicine database software standardization.

2. **BACKGROUND.** The goal of the Clinical Applications Division (hereinafter referred to as CAD), Telemedicine and Advanced Technology Research Center (hereinafter referred to as TATRC), USAMRMC is to

standardize, when possible, software products that are developed by USAMRMC personnel and used in various telemedicine consult management systems (i.e. Teledermatology, Teledentistry and Tele-echocardio-graphy). By standardizing Commercial-Off-The-Shelf (hereinafter referred to as COTS) and Government-Off-The-Shelf (hereinafter referred to as GOTS) software to Microsoft COTS products, USAMRMC can benefit through maximizing code re-usability, familiarity, and integration with the Microsoft NT Server Operating System. This Memorandum of Agreement serves to establish a formal collaboration between TRICARE Europe and USAMRMC in the area of information science specifically concerning the replacement of O'Reilly & Associates, Inc. Website Pro 2.0 and COLD FUSION V.311, Application Server Pro. Code with Microsoft Internet Information Server (hereinafter referred to as IIS) and Microsoft Active Service Page (hereinafter referred to as ASP) code of the USAMRMC Teledermatology Consult Management System database deployed to TRICARE Europe April 1999.

3. **RESPONSIBILITIES.**

a. `TRICARE Europe will:

(1) Replace O'Reilly Web-site Pro and COLD Fusion Code with IIS and ASP Code.

SUBJECT: Collaborative Telemedicine Database Software Replacement Effort

(2) Evaluate the performance of the Teledermatology Consult Management System utilizing the IIS/ASP code.

(3) Ensure that the functionality of the Teledermatology Consult Management System will not be changed in anyway without the written advice and/or consent of the Director, CAD, TATRC, USAMRMC.

(4) Not distribute the Teledermatology Consult Management System to any Third Party without explicit written authorization from the Director, CAD.

(5) Ensure that any and all documentation of any changes made to the Teledermatology Consult Management System software is provided to the Directorate, CAD.

b. USAMRMC will:

(1) Provide the entire code and instructions to install and execute the Telederm Consult Management System.

(2) Have sole authorization to change the Teledermatology Consult Management System.

(3) Not be held financially responsible for any costs incurred by TRICARE Europe in

converting COTS software products O'Reilly Website Pro and COLD FUSION Code to COTS software products IIS and ASP.

(4) Ensure that only the Directorate, CAD is authorized to deploy the Teledermatology Consult Management System in IIS and ASP code format to a Third Party.

4. **EFFECTIVE DATE.** This agreement will become effective upon signature of both parties and will remain in effect for period not to exceed eighteen (18) months.

5. **REVIEW.** This agreement will be reviewed after six months to determine the viability of continuing the collaboration effort.

SUBJECT: Collaborative Telemedicine Database Software Replacement Effort

6. **TERMINATION.** This agreement may be terminated without cause by either party upon thirty (30) days written notice to the other party. This agreement may be terminated immediately when required by law or upon mobilization of forces.

7. **POINTS OF CONTACT.** POC for TRICARE Europe Command will be COL Debra A. Cerha, Executive Director, TRICARE Europe at Tel: 011-49-0-6302-67-6312 or DSN: 496-6312,6314. POC for USAMRMC will be LTC Ron Porapatich, Director, CAD, TATRC at (301) 619-7967 or DSN: 343-7967.

8. **APPROVAL.**

TRICARE Europe: U.S. Army Medical Research and
                                  Materiel Command:

_____   _____
MICHAEL J. KUSSMAN   JOHN S. PARKER
Brigadier General, USA   Major General, MC
Chairman   Commanding
Executive Steering Committee   U.S. Army Medical Research and
TRICARE Europe   Materiel Command

_____   _____
DATE   DATE

Bibliography

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